Through Prof's efforts, Purdue Calumet becomes a member of the world's two largest high energy physics labs

Through Assistant Professor of Physics Neeti Parashar's work on two scientific experiments, Purdue Calumet has become part of the world's largest high energy physics laboratories.

Prof. Parashar, who joined Purdue Calumet's physics faculty last fall, is participating in two international projects. One experiment is being conducted at the Fermi National Acceleratory Laboratory in Batavia, Ill. and the other at the European Center for Nuclear Research (CERN), based in Geneva Switzerland.

"Because of the nature of their experiments, high-energy physicists must do their research in collaboration with large laboratories like Fermilab and CERN," Parashar said. "I am very delighted that PUC is now among many prominent institutions on these world class experiments.

"It is a tremendous leap forward for our physics department and its research," said Prof. Parashar, principal investigator for the experimental high energy physics group, which researches particle collisions. Her research activities are federally funded by the National Science Foundation.

Neeti Parashar, Purdue Calumet assistant professor of physics, holds a model of the Forward Pixel Detector that her research team is building for a scientific experiment at Fermilab in Batavia, Ill

"We are exploring the building blocks of our universe," she said. "The goal is to discover the identity and properties of the particles that make it and to understand the interactions among those particles."

The primary instrument used for this work is a particle accelerator called the Tevatron. It is the world's most powerful accelerator, a tunnel measuring four miles in circumference and located at Fermilab and the Large Hadron Collider (LHC) at CERN. The LHC - the next higher energy accelerator, a 17 miles circular tunnel - is being built at CERN. In these accelerators, protons circulate in opposite directions at the speed of light. The tunnels are populated with superconducting magnets to manipulate the behavior of protons that collide at certain points.

"These high energy collisions recreate the primordial universe just after the Big Bang, though on a very small scale," Prof. Parashar said. "If we could understand how it all began then, we can reconstruct how we got where we are now."

Her research group includes post-doctoral fellow Vesna Cuplov, a graduate student, and some undergraduate students. Prof. Parashar said, "I love to work with students, especially, since they are our future. If I can continue to inculcate an interest for physics in a few of them, I will feel I am doing my job for society."

Prof. Parashar received her Ph.D. from the University of Delhi in 1995. After working at the University of Oxford (UK), she won the prestigious INFN Fellowship from the government of Italy to do her post-doctoral work, followed by another position at Northeastern University in Boston.

Prof. Parashar comes from a family of physicists.

"My father came from a very humble background in India and won a Fulbright Fellowship to do a Ph. D. in physics from the University of Hawaii," she said. "My parents' sacrifice and hard work have always been the guiding inspiration in my life. My husband, a research professor in high energy physics, has been my long-time companion, supporting me tremendously both on the social and academic front. My two siblings are also physicists."